

- Faculté des sciences économiques
- www.unine.ch/seco

Machine Learning (5MI2018)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Master en développement international des affaires	Cours: 4 ph	Voir ci-dessous	6
Master en économie appliquée	Cours: 4 ph	Voir ci-dessous	6
Master en finance	Cours: 4 ph	Voir ci-dessous	6
Master en systèmes d'information	Cours: 4 ph	Voir ci-dessous	6
Master in General Management	Cours: 4 ph	Voir ci-dessous	6
Master of Science en innovation	Cours: 4 ph	Voir ci-dessous	6

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Printemps

Equipe enseignante

Iulian Ciorascu
Lecturer
Information Management Institute,
A.L.Breguet 2, CH-2000 Neuchâtel,
tel: +41 32 718 13 70
iulian.ciorascu@unine.ch

Alessio de Santo
Teaching assistant
Institut du management de l'information
A.L.Breguet 2, CH-2000 NEUCHATEL
+41 32 718 1370
alessio.desanto@unine.ch

Contenu

The course presents a practical approach to advanced Data Mining and Machine Learning techniques. Use several Use Cases to gather first-hand experience and apply the Machine Learning techniques to real-life problems. The Use Cases have increased difficulty and are tailored towards specific goals and difficulties including the following:

- define possible problems to be solved or patterns to be discovered from the data.
- recognize the techniques to be applied to specific problems.
- evaluate and optimize the techniques.
- visualize and interpret the results.

Recognize the limitations and explore the possible places that could be improved. In this important step, advanced techniques and their advantages will be discussed and Full Python implementations and using Python customizations/plugins to existing data mining software (RapidMiner) to enhance and adapt existing methods are used in parallel by different groups and the advantages/disadvantages of each approach is evaluated at the end of the projects.

Classic Data Mining techniques as well as new, modern, versions of the classical algorithms are explored during the course. Each project will focus on one different method from the following: Classification, Prediction, Clustering, Recommendations, Association.

Forme de l'évaluation

- 2-hour written exam during the semester (60%) and project/exercises (40%)
- Catch-up exam: 2-hour written exam during the autumn session(100%)

- Allowed documents during exams: course slides with annotations.
- Connected devices are not permitted during the exams. In case of violation of this rule, the students are in a situation of fraud and the unauthorised items will be removed. The exam could be deemed as failed.

Documentation

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Course documentation on moodle

Introduction to Machine Learning with Python: A Guide for Data Scientists by Andreas C. Müller & Sarah Guido

Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems by Aurélien Géron

Pré-requis

The course of Data Management is strongly recommended for the data preparation as well as notions of the Python programming language

Forme de l'enseignement

4h Interactive course with exercises and projects

Objectifs d'apprentissage

Au terme de la formation l'étudiant-e doit être capable de :

- Recognise the techniques to be applied to different problems
- Demonstrate the effectiveness of a model
- Evaluate and optimise the deployment of the model
- Interpret the results of a Machine Learning techniques
- Develop solutions to solve the problems using Machine Learning techniques
- Define possible problems to be solved or patterns to be discovered from the data
- Select transform and explore the data to bring the information to the surface

Compétences transférables

- Apply knowledge to new situations
- Carry out critical and evidence-based analyses